Status of the Claims

1-39. (Canceled)

40. (Previously Presented) A method of using a holographic reticle to characterize an optical system, the method comprising the steps of:

(1) configuring the optical system such that a first plane containing the reticle is positioned obliquely to a second plane where the image is recorded;

(2) placing the holographic reticle in a path of an optical beam within the optical system;

(3) recording an image produced by the optical beam passing through the holographic reticle; and

(4) analyzing the image to characterize the optical system for at least one of field curvature, astigmatism, coma, distortion, telecentricity, spherical aberrations, and variation of coherence.

41. (Original) The method of claim 40, wherein the holographic reticle has a plurality of feature sets thereon.

42. (Original) The method of claim 41, wherein the plurality of feature sets includes at least one of a periodic pattern and a grating pattern.

43. (Original) The method of claim 40, wherein the second plane is positioned in a volume of space that includes a depth of focus of the optical system.

44. (Previously Presented) The method of claim 40, wherein step (3) comprises:

recording the image produced by the optical beam passing through the holographic reticle in a recording medium.

45. (Previously Presented) The method of claim 61, wherein the recording medium is a photo-sensitive substrate.

46. (Previously Presented) The method of claim 40, wherein step (4) comprises:

analyzing the image to extract a feature image shift.

47. (Previously Presented) The method of claim 40, wherein step (4) comprises:

analyzing the image in real time using a demodulating device to characterize the optical system.

48. (Previously Presented) The method of claim 40, wherein step (4) comprises:

analyzing the image to extract a Zernike aberration.

49. (Previously Presented) A method of using a holographic reticle to characterize an optical system, the method comprising the steps of:

(1) configuring the optical system such that a first plane containing the reticle is positioned obliquely to a second plane where the image is recorded;

(2) placing the holographic reticle in a path of an optical beam within the optical system;

(3) recording an image produced by the optical beam passing through the holographic reticle; and

(4) analyzing the image interferometrically to produce an interferogram having one or more tilts and one or more pistons that represent at least one optical parameter of the optical system.

50. (Original) The method of claim 49, further comprising the steps of:

(a) detecting an image shift based on said pistons; and

(b) detecting magnification parameters based on said tilts.

51. (Previously Presented) The method of claim 50, further comprising the step of:

(c) detecting non-uniform distortion parameters based on said pistons and tilts.

52. (Original) The method of claim 51, wherein said non-uniform distortion parameters are detected as a function of a variation in linewidth.

53. (Original) The method of claim 51, wherein said non-uniform distortion parameters are detected from a non-linear phase front of a chirped grating structure.

54. (Previously Presented) The method of claim 40, wherein step (4) comprises:

comparing the image with another recorded image to deconvolve higher order aberrations in the optical system from lower order aberrations.

55. (Original) The method of claim 54, wherein said comparing step further comprises:

determining the relative shift differences due to the different partial coherence conditions of the recorded images.

56. (Previously Presented) The method of claim 40, wherein the holographic reticle includes a pattern of linewidths such that each linewidth is an integral multiple of a fundamental linewidth.

57. (Original) The method of claim 56, wherein step (3) comprises:

analyzing the image for relative image shifts at a single interferometric angle.

58-60. (Canceled)

61. (Previously Presented) The method of claim 40, wherein step (2) comprises:

recording the image produced by the optical beam passing through the holographic reticle in a recording medium.

62. (Previously Presented) The method of claim 40, wherein step (3) comprises:

analyzing the image to extract a Zernike aberration.

63. (Previously Presented) The method of claim 40, wherein step (3) comprises:

comparing the image with another recorded image to deconvolve higher order aberrations in the optical system from lower order aberrations.

64. (Previously Presented) The method of claim 63, wherein said comparing step further comprises:

determining the relative shift differences due to the different partial coherence conditions of the recorded images.

The listing of claims will replace all prior versions, and listings of claims in the application.